Thirty-one Years of the Canadian Journal of Information and Library Science: A Content Analysis / Trente et un ans de la Revue canadienne des sciences de l'information et de bibliothéconomie : une analyse de contenu

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Thirty-one Years of the Canadian Journal of Information and Library Science: A Content Analysis

Trente et un ans de la Revue canadienne des sciences de l'information et de bibliothéconomie : une analyse de contenu

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Abstract: This article presents the results of a content analysis of the *Canadian Journal of Information and Library Science / Revue canadienne des sciences de l'information et de bibliothéconomie.* All articles published since 1986 were analysed for language of publication, number of authors, authors' geographic location, article subject matter, and research methods used in empirical work. Longitudinal trends are noted. These data are compared with earlier descriptions of information science in Canada, and with analyses of the work of Canadian scholars in information science, to paint a fuller picture of the field as it has matured over the past 31 years.

Keywords: information science research, Canada, content analysis, longitudinal trends

Résumé : Cet article présente les résultats d'une analyse de contenu de la *Revue canadienne des sciences de l'information et de bibliothéconomie / Canadian Journal of Information and Library Science*. Tous les articles publiés depuis 1986 ont été analysés pour la langue de publication, le nombre d'auteurs, l'origine géographique des auteurs, le sujet de l'article et les méthodes de recherche utilisées dans les travaux empiriques. Les tendances longitudinales ont été notées. Ces données sont comparées aux descriptions antérieures des sciences de l'information au Canada et aux analyses des travaux des chercheurs canadiens en sciences de l'information, afin de brosser un tableau plus complet du domaine tel qu'il a évolué au cours des 31 dernières années.

Mots-clés : recherche en sciences de l'information, Canada, analyse de contenu, tendances longitudinales

Introduction

The *Canadian Journal of Information and Library Science / Revue canadienne des sciences de l'information et de bibliothéconomie* (*CJILS/RCSIB*) is a scholarly

journal started in 1976 and published by the Canadian Association for Information Science / Association canadienne des sciences de l'information (CAIS/ACSI), founded in 1971. It is Canada's oldest bilingual, scholarly journal in the field of library and information science (LIS), although there are other journals in the field published in Canada. The *CJILS/RCSIB* has been peer reviewed since 1986. More historical detail is provided by Nilsen (2007, 2010), who contributed important milestone analyses of the history of the CAIS/ACSI and of the association's annual conferences. Additionally, Wolfram (2012) analysed the contributions of Canadian scholars to the field of information science, revealing that the most popular publication venue for these scholars between 1989 and 2008 was the *CJILS/RCSIB*. The journal not only publishes Canadian authors but also publishes the work of authors globally. To date, there has not been a quantitative analysis of the journal to identify longitudinal trends in authorship, editorship, and publishing focus. Such an analysis can inform future editorial decisions.

Literature review

In recent years, there have been a number of studies of LIS scholarship, which have analysed variables including author profession, author discipline, author gender, author nationality, number of authors, collaboration amongst co-authors, subject matter, and research methods. Because these analyses often use differing methods, do not always include the same journals as sources for the articles examined, and look at different years and time spans, the findings cannot always be directly compared to each other or to the findings of the present study. Table 1 shows the wide range of parameters and time spans used in selected studies of LIS scholarship published between 2008 and 2017. Despite the wide variety of methods and parameters in these analyses, however, general trends are apparent in a variety of areas, and it is useful to examine how the results of the present study relate to the findings of other analyses of LIS scholarship.

One aspect of authorship that has garnered broad interest in scholarship analyses is the profession and/or discipline of an author, especially whether the author is a practising librarian or an LIS faculty member/academic. Many recent analyses of LIS scholarship have focused specifically on author profession and/or discipline as a main variable in the study (Aharony 2011; Aytac and Slutsky 2014; Chang 2017; Finlay et al. 2013; Julien, Pecoskie, and Reed 2011; Larivière, Sugimoto, and Cronin 2012; Paul-Hus, Mongeon, and Shu 2016; Walters and Wilder 2015). Although the present study does not consider these variables, it is interesting to note that a majority of studies have found an increase in articles published by academics as opposed to practising librarians (Chang 2017; Finlay et al. 2013; Julien, Pecoskie, and Reed 2011; Larivière, Sugimoto, and Cronin 2012). Other studies were less concerned with author profession and more interested in examining author discipline and/or institution (Aharony 2011; Paul-Hus, Mongeon, and Shu 2016; Walters and Wilder 2015; Wolfram 2012). Unsurprisingly, these studies found that LIS is the dominant

Table 1. Selected studies that analyse LIS scholarship, published between 2008 and 2017

Publication year of study	Author(s) of study	Parameters/source of article selection	Years analysed
2017	Chang (2017)	20 OA LIS journals; 13 non-OA LIS journals	2008–13
2017	Hussain (2017)	*Journal of King Saud University-Computer and Information Sciences*	2004–14
2016	Paul-Hus, Mongeon, and Shu (2016)	Canadian LIS authors	2010–15
2016	Yang, Lee, and Choi (2016)	163 LIS Korean authors	2001–10
2015	Chang, Huang, and Lin (2015)	580 highly cited LIS articles	1995–2014
2015	Walters and Wilder (2015)	31 LIS journals	2007–12
2014	Aytac and Slutsky (2014)	13 LIS journals	2008–12
2014	Naseer and Mahmood (2014)	LIS literature produced in Pakistan	1947–2008
2014	Tuomaala, Järvelin, and Vakkari (2014)	46 LIS journals	1965, 1985, 2005
2014	Zhao and Strotmann (2014)	12 IS journals	2006–10
2013	Finlay, Ni, Tsou, and Sugimoto (Finlay et al 2013)	20 LIS journals	1956–2011
2012	Chang and Huang (2012)	10 LIS journals	1978–2007
2012	Larivière, Sugimoto, and Cronin (2012)	160 LIS journals	1900–2010
2012	Wolfram (2012)	Canadian LIS authors	1989–2008
2011	Aharony (2011)	10 LIS journals	2007–8
2011	Julien, Pecoskie, and Reed (2011)	749 articles on information behaviour	1999–2008
2011	Sin (2011)	6 LIS journals	1980–2008
2010	Blessinger and Hrycaj (2010)	32 highly cited LIS articles (scholarly communication)	1994–2004
2009	Naseer and Mahmood (2009)	*Pakistan Library and Information Science Journal*	1998–2007
2009	Bhaskar (2009)	17 OA LIS journals	2000–4
2008	Meadows (2008)	Well-cited articles from the *Journal of Information Science* and the *Journal of Documentation*	1968–2007

field of authors, but other primary disciplines have included computer science, communications, and management (Blessinger and Hrycaj 2010; Larivière, Sugimoto, and Cronin 2012; Paul-Hus, Mongeon, and Shu 2016; Walters and Wilder 2015).

Another aspect of authorship, which has garnered less attention in these analyses, is the issue of gender. Bhaskar (2009) found that more male authors than female authors published in open access (OA) journals, but Wolfram (2012, 62) noted that 12 out of 20 authors in his study were female. Author nationality was also examined both generally and in nation-specific articles. Both Wolfram (2012) and Paul-Hus, Mongeon, and Shu (2016) were particularly concerned with Canadian authors. Other studies were concerned with articles specifically by Korean authors (Yang, Lee, and Choi 2016), articles published by scholars living in Pakistan (Naseer and Mahmood 2014), and articles published

in two UK journals (Meadows 2008). Walters and Wilder (2015) found within their sample of articles that the nations that contributed the most to LIS research between 2007 and 2012 were the United States, the United Kingdom, Spain, China, Canada, and Taiwan.

One last aspect of authorship that has become a focus of scholarship analyses is the extent to which the number of authors per article has changed over time, with particular attention paid to the ideas of collaboration and interdisciplinarity. Whereas Bhaskar (2009) found that team research was not very common in OA LIS journals from 2000 to 2004, many other studies have shown a decided increase in author collaboration over the past 20 years (Aytac and Slutsky 2014; Chang and Huang 2012; Julien, Pecoskie, and Reed 2011; Larivière, Sugimoto, and Cronin 2012; Sin 2011; Wolfram 2012). For example, Aytac and Slutsky (2014) found that, overall, the majority of articles they investigated, covering the years 2008–12, were multi-authored (64.5%). Larivière, Sugimoto, and Cronin (2012) showed that the average number of authors per article steadily increased from 1.4 in 1995 to 2.4 in 2010, with roughly two-thirds of all LIS articles being multi-authored by 2010. Many authors also examined the nature of the collaborations, looking for trends in international and/or cross-disciplinary authorship. Sin (2011, 1770), for example, looked especially at international collaboration and found that not only has international collaboration increased since 1995, but papers that include international collaboration with at least one author from a high-income nation also had higher odds of better citation rates. Paul-Hus, Mongeon, and Shu (2016), in their bibliometric analysis of contemporary information science research in Canada, found that Canadian LIS authors primarily disseminate their work through research articles and that their collaborators were largely other Canadian scholars, with collaborations with authors from the United States being the next largest category.

Another variable considered by a number of these studies is the type of articles being published. Different studies defined "type" in different ways. Julien, Pecoskie, and Reed (2011), for example, differentiated between the same three article types as the present study—research article, commentary, or report of service—and found that the majority of articles examined were research articles (70.6%). Other studies, such as Aytac and Slutsky (2014), limited their sample to only research articles, which they found were 43% of the total articles they screened. Within the category of research articles, they divided up the types of article further by considering whether the research approach was descriptive, explanatory, exploratory, evaluative, or multiple/combined. Of these, the descriptive approach was the most prominent by far, followed by exploratory and evaluative to a much lesser degree (Aytac and Slutsky 2014, 156).

One of the most expansive and well-developed variables analysed throughout these studies is the subject matter of the articles. Scholars have defined topic categories in a variety of ways, developing classification systems that are sometimes reused in follow-up studies. In Wolfram's (2012) classification system, which is the one used for the present study, Wolfram devised nine categories as follows: information behaviour, information organization, information retrieval, scholarly

communication, information policy, education, professional issues, research methods, and other subject matter. Wolfram found that information behaviour had the steadiest increase between 1989 and 2008, with information retrieval in relative decline, although it still remained popular (58). Wolfram found scholarly communication and informetrics to be the smallest category amongst the Canadian authors he examined. Blessinger and Hrycaj (2010, 158), in their analysis of 32 highly cited LIS articles, used five subject categories as follows: research in librarianship/users, technology, library operations, publishing/publishing studies, and the library/information science profession. Of these, they found research in librarianship/users to be the most dominant topic by far, with 68% of the articles examined focused on this topic, and the next most popular topic being technology, at 22% of articles examined. Aytac and Slutsky (2014, 157), who included the *CJILS/RCSIB* in the journals they selected for their study, used 14 topic categories to analyse articles published between 2008 and 2012: libraries and librarianship (19%), library users/information seeking (13%), medical information/research (13%), reference services (12%), library resources (including e-resources) (10%), information literacy (8%), technical services (including cataloguing and classification) (7%), information and communication technologies (5%), social media tools (3%), research and science (3%), bibliometrics and citation analysis (3%), science information resources (2%), others (2%), and publishing (1%). Koufogiannaki, Slater, and Crumley (2004, 234), in their study on LIS literature published in 2001, identified six "domains": information access and retrieval, collections, management, education, reference, and professional issues, with information access and retrieval being the most prominent domain for that year. In their study, Tuomaala, Järvelin, and Vakkari (2014, 1448) classified subject matter according to a classification scheme originally presented by Järvelin and Vakkari (1990), with the following major classes: the profession in library and information services, library history, publishing (including book history), education, methodology, analysis of LIS, library and information-service activities, information storage and retrieval, information seeking, scientific and professional communication, and other. Tuomaala, Järvelin, and Vakkari (2014) found that the most significant changes between 1965 and 2005 were the slowing of interest in library and information-service activities and the growth of research in information seeking and scientific communication.

A general trend in subject matter across most studies was a decline in articles about information retrieval in recent years and an increase in articles on information behaviour, with some authors observing a surge in informetrics and scholarly communication after 2010. Zhao and Strotmann (2014, 995), for example, concluded that there was a "(re)growth of the webometrics area after a period of decline from 2001 to 2005 and 2006 to 2010." Chang, Huang, and Lin (2015) used keyword, bibliographic coupling, and co-citation analyses to investigate research topics in highly cited papers published between 1995 and 2014 in ten LIS journals, and they found that bibliometrics and information seeking / information retrieval were the most popular topics in the literature, with the latter decreasing in popularity over time. Aharony (2011) conducted a content analysis

of keywords and abstracts to determine topics of articles published in 10 top LIS journals in 2007 and 2008 and found that the most popular were information technology and social information science.

One final variable relevant to the present study is authors' attention to research methods in their analyses of LIS scholarship. Like subject matter, different authors have used different classification systems to analyse this variable. Aytac and Slutsky (2014, 156), for example, who examined literature published between 2008 and 2012, used 12 different research method variables: surveys (40%), content analysis (35%), interviews (10%), bibliometric analysis (5%), focus groups (4%), case studies (3%), observations (1%), usability studies (1%), ethnographic studies (< 1%), delphi studies (< 1%), card sorting (< 1%), and phenomenography (< 1%). Tuomaala, Järvelin, and Vakkari (2014, 1452), who examined literature published in 1965, 1985, and 2005, used 11 different categories in their analysis: questionnaire or interview(s) (15%), observations (0.3%), thinking aloud (0.1%), content analysis (2.9%), citation analysis (6.3%), historical source analysis (5.3%), several methods of collection (14.3%), use of data collected earlier (5%), information retrieval experiments (16.9%), other data-collection methods (9.3%), and not applicable (24%).

It is useful to compare the results of the current study with data such as these to examine the "fit" of articles published in the *CJILS/RCSIB* in the overall LIS landscape.

Research problem

The *CJILS/RCSIB* is Canada's oldest scholarly journal in the field of information science and is the most popular venue for Canadian authors in the field. A close analysis of the journal can reveal transformation over time and help to determine whether the journal is meeting the goals of its publisher, the CAIS/ACSI, and its editors. This analysis was undertaken to provide data to inform future directions for the journal.

Research questions

1. What is the proportion of English to French articles published in the *CJILS/RCSIB* between 1986 and 2017?
2. What are the authorship patterns of articles published in the *CJILS/RCSIB* between 1986 and 2017 (number of authors, locations of authors)?
3. What types of articles were published in the *CJILS/RCSIB* between 1986 and 2017?
4. What were the topics of articles published in the *CJILS/RCSIB* between 1986 and 2017?
5. What were the research methods used in empirical articles published in the *CJILS/RCSIB* between 1986 and 2017?
6. What were the characteristics of the *CJILS/RCSIB* journal editors between 1986 and 2017?
7. What were the compositions of the *CJILS/RCSIB* editorial boards between 1986 and 2017?

Method

Every article published in the *CJILS/RCSIB* between 1986 (when all articles started to be peer reviewed) and 2017 was analysed using quantitative content analysis (Krippendorff 1980), a method commonly used in LIS (cf. White and Marsh 2006; Julien, Pecoskie, and Reed 2011). Book reviews, editorials, and other content were not included in the analysis. Variables analysed included:

- language of article
- number of authors per article
- geographic location of all authors
- author gender (male/female, determined by first name or through an online search if needed)
- article types (commentary, which is opinion without research; report of service, which describes activities in information services; or empirical research study, which is a report of a systematic collection of data for a particular purpose (Julien, Pecoskie, and Reed 2011)
- major subject matter of articles (based on Wolfram's [2012] classification)).

In addition, we analysed research methods used in empirical studies, with methods classified inductively. All methods used were classified, so where more than one method was used in a single paper, all methods were recorded. The characteristics of the journal editors (institutional affiliation and gender) and the composition of the editorial boards were analysed, where those data could be found. Locating these data was challenging since editorial boards were not listed in earlier volumes of the journal.

Data analysis for all variables was quantitative, and longitudinal trends in the data were analysed.

Results

A total of 402 articles fit the parameters for inclusion. The vast majority (89.6%, n = 360) were published in English, and 10.4% (n = 42) were published in French. This balance reflects, to some extent, the relative proportion of English language and French language LIS academics in Canada. Among the articles analysed, 20.1% (n = 81) were conference papers (from the annual conference of the CAIS/ACSI), and 4.7% (n = 19) were special lectures. The majority of papers were single authored (59.7 %, n = 240), but 27.9% (n = 112) included a second author, 6.5% (n = 26) included a third author, 3.7% (n = 15) included a fourth author, and 2% (n = 8) included five or more authors. Authors were approximately evenly divided by gender, with 201 female authors (50.0%) and 194 male authors (48.3%); the remainder could not easily be classified on the basis of the name or an online search. Most first authors (66.2%, n = 266) were identified with Canadian geographic locations, but 15.9% (n = 64) were from the United States, 11.0% (n = 44) were from Europe, and the rest were from other parts of the world (figure 1).

Most articles were empirical studies (51.5%, n = 207), while 42.8% (n = 172) were commentaries, 4.2% (n = 17) were reports of service, and 1.2% (n = 5) were literature reviews (figure 2).

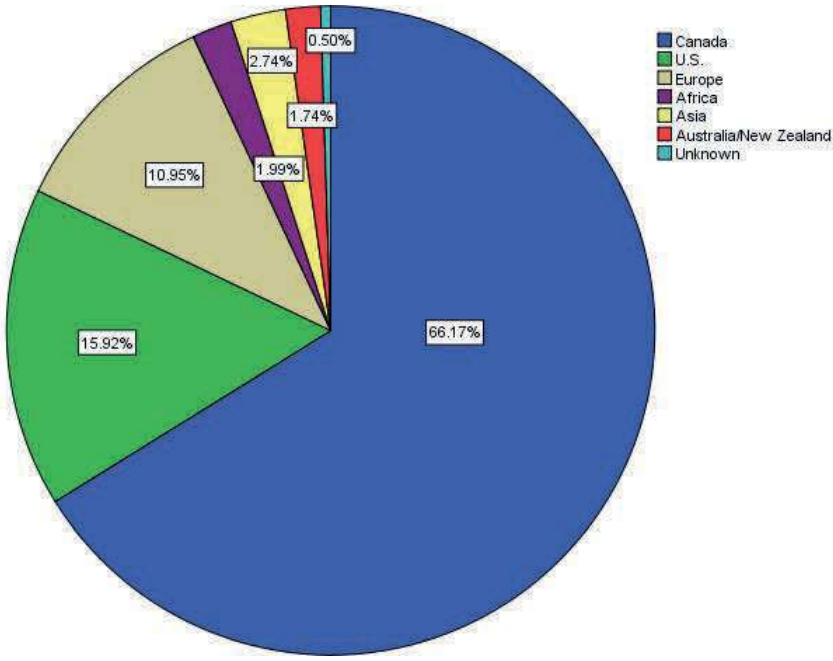

Figure 1: Geographic location of first author

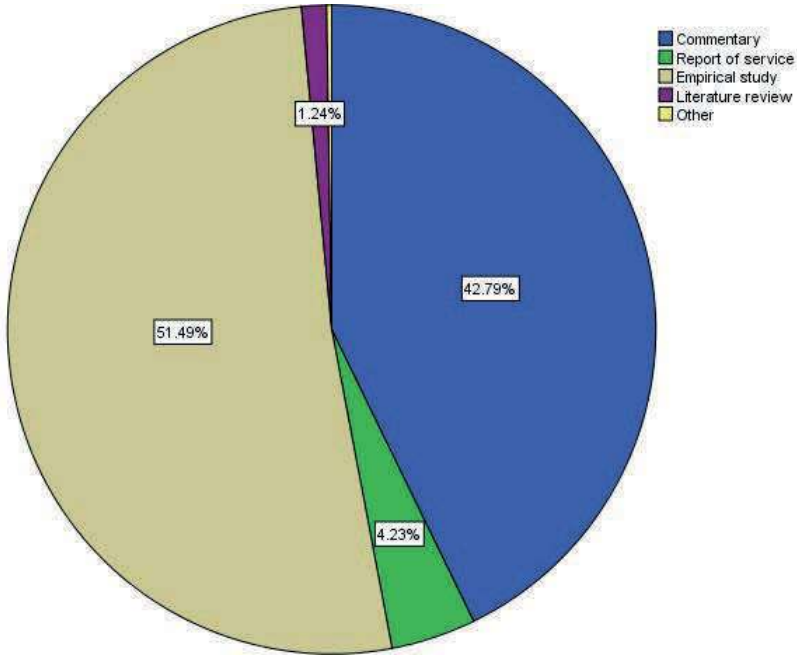

Figure 2: Article type

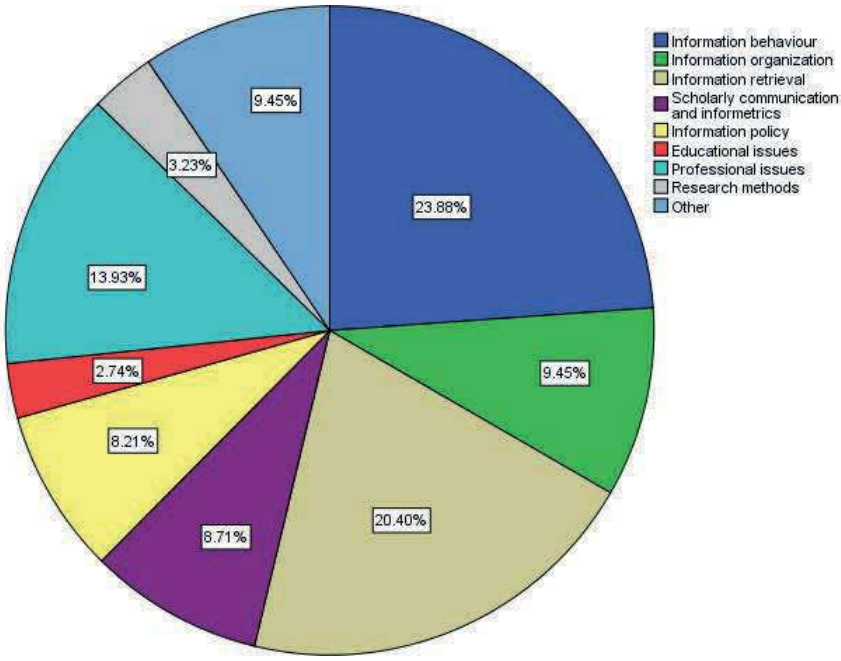

Figure 3: Article topic

A wide range of topics was represented in the sample. Information behaviour was the most prevalent (23.9%, n = 96), followed by information retrieval (20.4%, n = 82), professional issues (13.9%, n = 56), information organization (9.5%, n = 38), scholarly communication and informetrics (8.7%, n = 35), information policy (8.2%, n = 33), research methods (3.2%, n = 8), educational issues (2.7%, n = 11), and a mixed group of other topics (9.5%, n = 38) (figure 3).

Empirical papers were analysed for the research methods employed. The most common method used was surveys (18.8%, n = 39), followed by textual analysis (18.3%, n = 38), mixed methods (17.8%, n = 37), interviews (13.0%, n = 27), bibliometrics (12.0%, n = 25), experiments (8.7%, n = 18), transaction log analysis (5.8%, n = 12), ethnography (2.9%, n = 6), and focus groups (1.9%, n = 4) (figure 4).

The editors of the *CJILS/RCSIB* have included:

- Charles Meadow, University of Toronto (1986)
- Ethel Auster, University of Toronto (1987–91)
- Joan Cherry, University of Toronto (1992–95)
- Lynne Howarth, University of Toronto (1996–2001)
- Lynne McKechnie, University of Western Ontario (2002/2003–7)
- Heidi Julien, University of Alberta (2008–10)
- Clément Arsenault, Université de Montréal (2011–15)
- Valerie Nesset, University at Buffalo (2015–present).

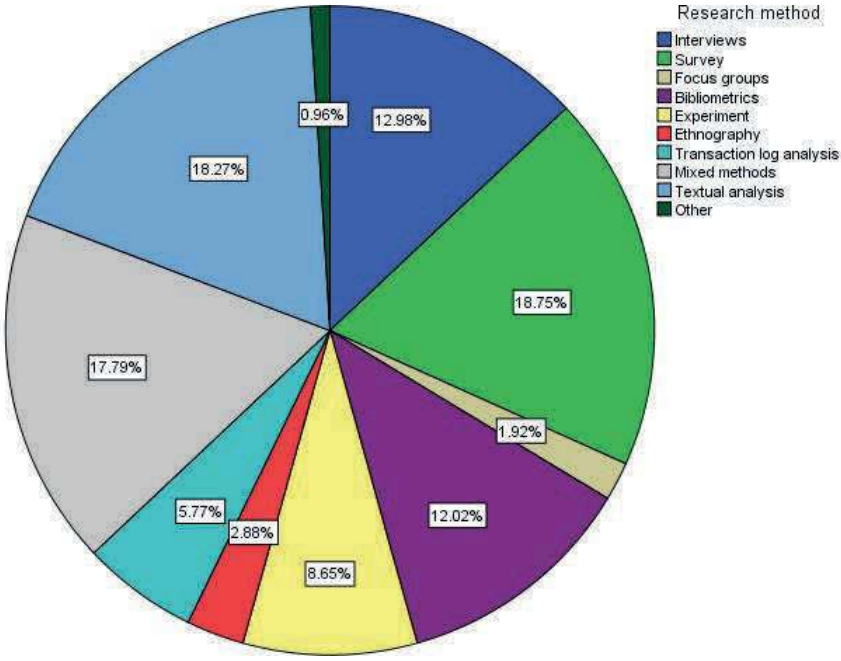

Figure 4: Research methods

All of these editors are Canadian, although the most recent editor, Valerie Nesset, works in the United States. Special issues have been edited by Réjean Savard, Wendy Duff, Margaret Mackey, Paulette Rothbauer, Elaine Ménard, Luciana Duranti, and Fidelia Ibekwe-SanJuan. Where editorial boards were clearly identified (for only 19% of articles), the number of members ranged from 11 to 20, with a mode of 14. Where it could be discerned, the ratio of male to female board members was typically about even, with females significantly outnumbering males during some years.

Relationships between the variables could not be statistically analysed due to the small number of cases, but there were some discernable differences by gender of first author. For example, male authors were more likely to author commentaries, and female authors were more likely to author empirical studies. In addition, male authors were less likely to author articles focused on information behaviour and professional issues and more likely to author articles focused on information retrieval. Female authors were more likely to author articles focused on information behaviour, information policy, and professional issues.

Longitudinal trends were analysed for a number of the variables. The number of French language authors varied somewhat over time, although, in several years, no French language articles were published. During the years when the

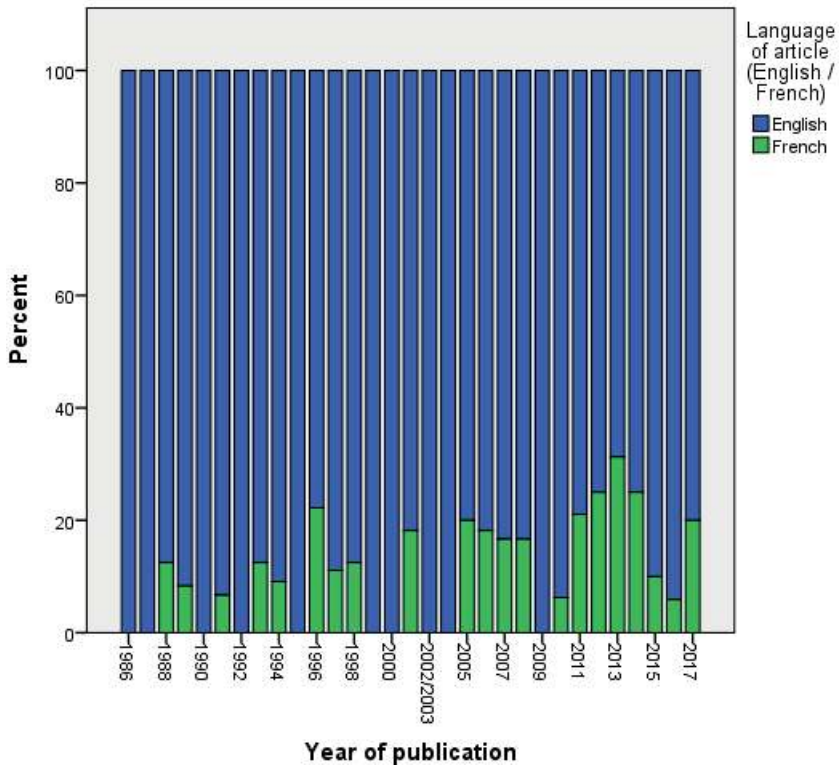

Figure 5: Language of articles over time

journal was edited by a francophone, however, more French language articles were published (figure 5).

In addition, the number of authors per article changed over time, so that in recent years it became more common to include two or more authors per article (figure 6).

The geographic location of all authors also varied over time. The journal has become more international, with more authors from Africa and Asia publishing work in the journal in recent years (figure 7). Figure 7 divides time into three separate decades. In the first decade (1986–96), over 80% of authors were Canadian, whereas that percentage changed to about 45% between 2008 and 2017.

The types of articles have shifted, with fewer commentaries and more empirical studies being published as time has passed (figure 8).

Article topics have also changed over time. Proportionally, information behaviour papers were published in greater numbers between 2002 and 2010, while information retrieval papers have diminished over time, and scholarly communication articles have increased (figure 9).

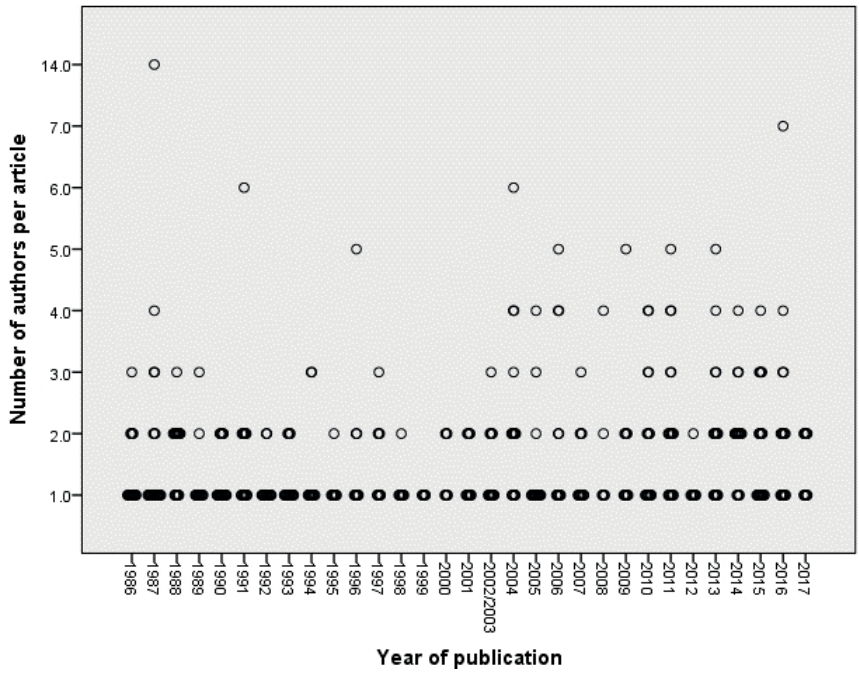

Figure 6: Number of authors per article over time

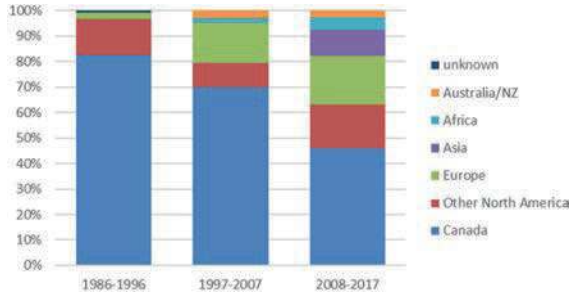

Figure 7: Geographic location of authors over time

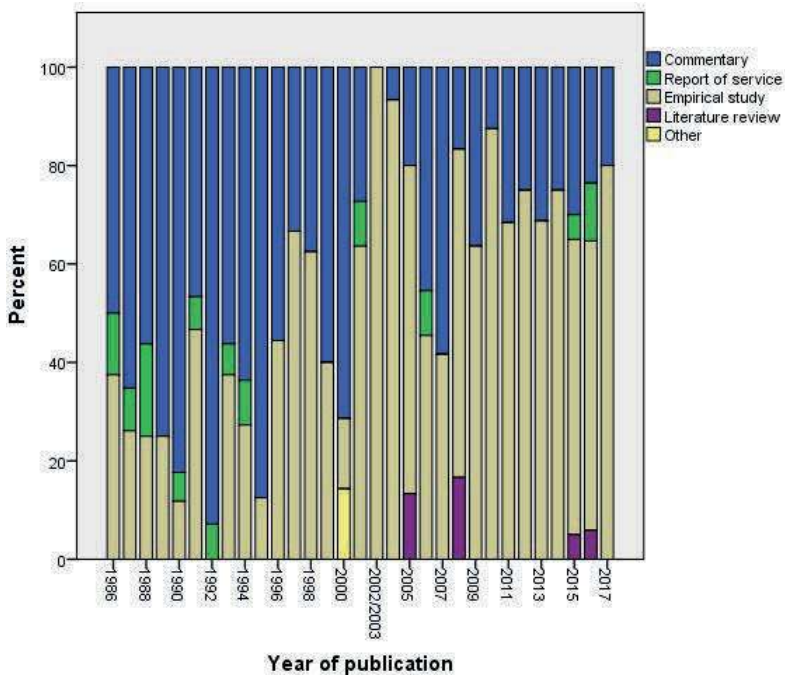

Figure 8: Article type by year

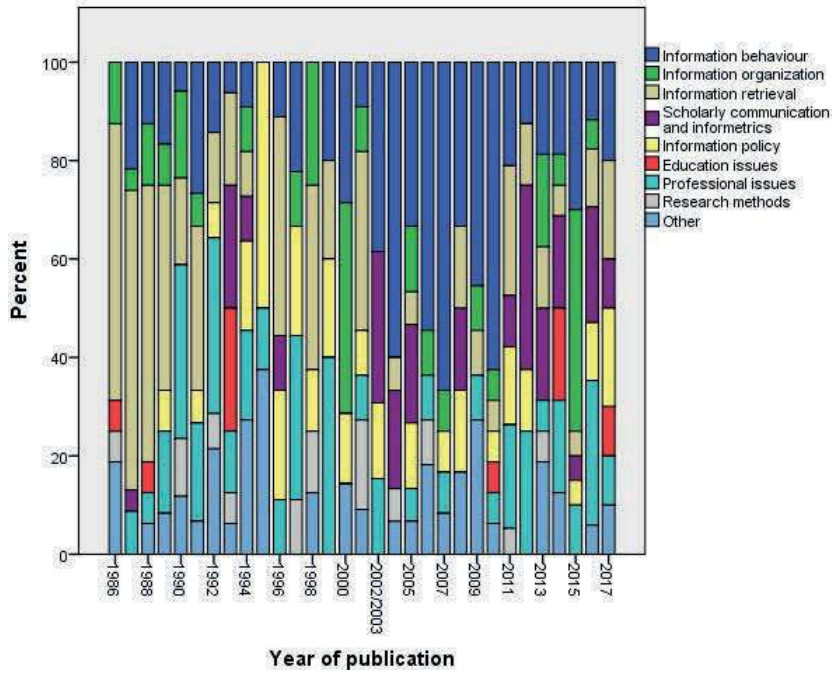

Figure 9: Article topics over time

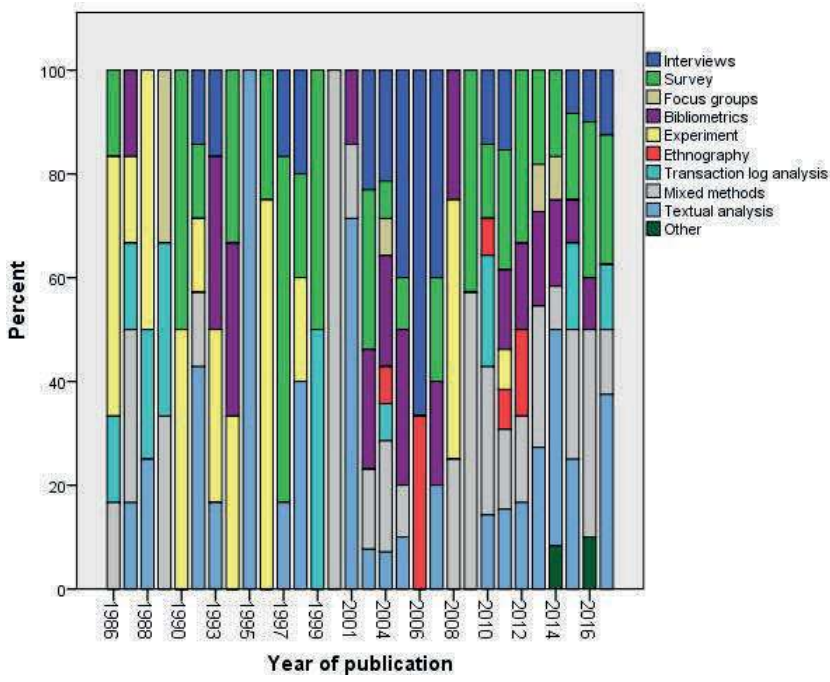

Figure 10: Research methods over time

Research methods also have shifted. Mixed methods gained in popularity in recent years, and the use of interviews increased between 2002 and 2007, while fewer papers using experimental methods were published (figure 10). Survey and textual analysis have remained relatively stable, and ethnography was not used at all before 2004.

Discussion and conclusions

The data demonstrate that the *CJILS/RCSIB* has been predominantly an English language journal, although it welcomes and publishes work written in French. Over time, the journal has published an approximately equal representation of male and female authors, most of whom are Canadian. In recent years, however, the authorship has been increasingly international. In addition, multiple authorship has increased over time, which was also found by Aharony (2011), Larivière, Sugimoto, and Cronin (2012), Paul-Hus, Mongeon, and Shu (2016), Sin (2011), and Wolfram (2012). Most articles have been empirical studies or commentaries, with more empirical studies in recent years. The most popular topics published were information behaviour and information retrieval, and the decreasing proportion of information retrieval papers mirrors the findings of Chang, Huang, and Lin (2015) and Wolfram (2012). In analysing publications from 1989 to 2008, Wolfram (2012) found increasing numbers of information behaviour papers published in a number of journals by Canadian LIS authors.

The most popular research methods used in empirical papers were surveys, textual analysis, mixed methods, interviews, and bibliometrics. Where this could be discerned, the journal's editorial boards reflect gender balance over time.

This study highlights the value of multi-faceted data analysis in portraying the growth and development of the discipline of information science in Canada and in identifying the diversity apparent in the field's production of research. Data that describe patterns in methodological approach, article type, article topic, language, and authorship enable the recognition of trends in disciplinary focus as well as provide indications of scholarly maturity and of counter-criticism of the field. Such data also provide a basis for comparison with similar data from other disciplines or from other geographic locations. Analysing data that reflect patterns in past and present *CJILS/RCSIB* articles informs understanding of not only the content and evolution of this research over time but also how this research intersects with the LIS field as a whole. Such analysis aids in the development of self-awareness of the diverse perspectives and interpretations within the CAIS/ASCI community and in imagining new paths, models, and patterns for future research in the field and for the *CJILS/RCSIB*. These data can be used to analyse whether the journal is meeting the goals of its publisher, the CAIS/ACSI, as well as the goals of its current editor and, thus, may inform future directions for the journal. In addition, this study lays the groundwork for future analyses to extend the longitudinal trends reported here.

Limitations

The findings presented in this article are limited to the focus of the analysis—that is, the *CJILS/RCSIB*. These results are not necessarily applicable to other journals in the field or to the field more generally, although many of the findings mirror those of other, more general, analyses. The results will be of particular interest to the editors and publisher of the journal, rather than to the field more generally.

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